UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,247	07/16/2003	Kazimierz J. Wikiel	004522-00019	9422

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EXAMINER
WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 01/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>07 November 2005</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-55* is/are pending in the application.

     4a) Of the above claim(s) *4-15,18,25,26,31 and 45-47* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-3,16,17,19-24,27-30,32-44 and 48-55* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *16 July 2003* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☐ All   b) ☐ Some *   c) ☐ None of:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____.

       3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/26/03,3/3/04*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1.   Applicant's election of the species in the reply filed on 7 November 2005 is

acknowledged. Because applicant did not distinctly and specifically point out the

supposed errors in the restriction requirement, the election has been treated as an

election without traverse (MPEP § 818.03(a)).

2.   Applicant failed to point out which claims are directed to the non-elected species.

As such the Examiner is taking the following actions:

> a.   Claims 4-15 are withdrawn as being non-elected species of genus (1).
>
> b.   Claims 18, 31 are withdrawn as being non-elected species of genus (2).
>
> c.   Claims 25-26 are withdrawn as being non-elected species of genus (4).
>
> d.   Claims 45-47 are withdrawn as being non-elected species of genus (6).

3.   The Examiner also acknowledges Applicant's admission that each of the

voltammetric methods of genus (3) are obvious variations of one another.

Claim Objections

4.   The specification is objected to as failing to provide proper antecedent basis for

the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction

of the following is required: internal validation (claim 50) is not defined in the

specification; the steps of claim 51 are not supported by the specification.

Double Patenting

5.   The nonstatutory double patenting rejection is based on a judicially created
doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the
unjustified or improper timewise extension of the "right to exclude" granted by a patent
and to prevent possible harassment by multiple assignees. A nonstatutory

obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6.   Claims 1-55 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-34 of copending Application No. 10/621,079. Although the conflicting claims are not identical, they are not patentably distinct from each other because the process of producing a predictive data set was identical.

This is a _provisional_ obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the
applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

8.   Claim rejected under 35 U.S.C. 102(a) as being anticipated by Richards et al

("Optimisation of a neural network model for calibration of voltammetric data").

[It is noted that the publication date of this article is 29 February, the publication date of

Vol. 61 of *Chemometrics and Intelligent Laboratory Systems*.]

Richards et al teach (see abstract and "2. Experimental") a method including the

steps of obtaining a sample set, wherein each sample includes an electrolyte solution of

a known composition, obtaining an electroanalytical (dual pulse staircase voltammetry)

response for each of the samples to produce an electroanalytical response data set,

obtaining a training set that included the sample set and corresponding response data

set, analyzing the training set using decomposition (PCA) and multivariate regression

(PCR, PLS) and validating the training data set to produce a predictive data set for a

calibration model.

Regarding claim 16 and 17, Richards et al uses (see figure 3) a DOE routine with

a multicomponent-multilevel linear orthogonal array.

Regarding claims 19 and 20, Richards et al teach (see page 36) using DPSV

(dual pulse staircase voltammetry).

Regarding claim 21, Richards et al teach (see figure 3) using multiple data

points.

Regarding claims 22 and 23, Richards et al teach (see figure 3) using a

combination of multiple portions of a complete electroanalytical response using multiple

independent responses at various concentrations.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

10.   Claims 2, 3 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Richards et al.

The method of Richards et al relates to calibration of voltammetric data of a

mixture of ethanol, fructose and glucose, not to an electroplating bath.

However, it has been well documented that voltammetric response had been

used to determine composition of copper electroplating baths.

Therefore, it would have been obvious to one of ordinary skill in the art to have

used the method of Richards et al to calibrate voltammetric data of other solutions, such

as the conventional copper electroplating bath voltammetric response.

Regarding claim 53, although not expressly taught by Richards et al, one of

ordinary skill in the art would have found it obvious to have applied the predictive data

set by (b1) obtaining an unknown sample set, (b2) obtaining the electroanalytical

response of the unknown samples, (b3) preprocessing the data set to be entered into

the predictive data set and (b4) applying the predictive calibration model to determine

the concentration in the unknown sample.

11.   Claims 27-44, 48, 49, 54 and 55 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Richards et al in view of Applicant's admission of prior art.

The teachings of Richards et al are described above.

Richards et al teach steps (a), (b), (c), (d), (e), (g), (i) and (j).

Thus, Richards et al fail to teach the two steps of detecting and eliminating

outliers with the response data and training sets.

However, Applicant admits as prior art (see paragraph 47 of PG-Pub

2005/0183958) that detection and elimination of outliers in statistical data sets was a

known technique in the prior art to control errors in the calibration.

Therefore, it would have been obvious to one of ordinary skill in the art to have

added a step of detection and elimination of outliers in the statistical data sets of

Richards et al for the purpose of controlling errors in the calibration.

Regarding claims 38 and 39, Applicant admits as prior art (see paragraphs 88-89

of PG-Pub 2005/0183958) that an autoscaling process known as unit variance was

known for a desired purpose. Therefore, it would have been obvious to one of ordinary

skill in the art to have used the conventional autoscaling process for the known purpose

of enhancing data point variation.

Regarding claims 40 and 48, Applicant admits (see paragraphs 101-104 and

183 of PG-Pub 2005/0183958) that SIMCA and F^C-ratio analysis were known methods

of outlier detection. Therefore, it would have been obvious to one of ordinary skill in the

art to have applied the conventional outlier detection schemes in order to enhance data accuracy.

Regarding claims 42-44, Applicant admits as prior art (see paragraph 172 of PG-Pub 2005/0183958) that PRESS (prediction residual error sum of squares) was a known method of determining the optimal number of factors for calibration. Applicant further admits that PCR and PLS were the typical regression methods to determine the self-predicted concentrations.

Therefore, it would have been obvious to one of ordinary skill in the art to have used the conventional PRESS method in order to determine the optimal number of factors for calibration. It further would have been obvious to one of ordinary skill in the art to have used the conventional PCR or PLS regression methods to determine the self-predicted concentrations because of their known advantages in the art.

Regarding claims 54 and 55, Richards et al do not teach step (b), namely obtaining a secondary sample set, obtaining the electroanalytical response for the secondary sample set and using a direct standardization technique to obtain a secondary-to-primary response data set. However, Applicant admits (see paragraphs 42 and 209 of PG/Pub 2005/0183958) that direct standardization techniques were known in the art for allowing a primary calibration model to be transferred. Therefore, it would have been obvious to one of ordinary skill in the art to have applied a secondary sample set with the electroanalytical results of the secondary sample set to create a secondary-to-primary transformation data set by a direct standardization technique in order to perform the prediction at a later time.

12.   Claims 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Richards et al and Applicant's admission of prior art as applied to claim 27 and further in

view of Schneider.

The teachings of Richards et al and Applicant's admission are described above.

However, Richards et al and Applicant's admission do not teach internal

validation by cross validation.

Schneider teaches several methods of cross validation as model evaluation

methods. The cross validation method was an internal process.

Therefore, it would have been obvious to one of ordinary skill in the art to have

applied the cross validation models taught by Schneider to ensure that the model

developed by the neural network of Richards et al was producing an adequate

prediction set.

Regarding claim 51, this claim corresponds to the "Leave-one-out cross

validation" method of Schneider.

Regarding claim 52, this claim corresponds to the "holdout" method of Schneider.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-

272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Harry D Wilkins, III
Examiner
Art Unit 1742

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